A qualitative approach to understanding the role of lecture capture in student learning experiences

Hall, Gareth; Ivaldi, Antonia

Published in:
Technology, Pedagogy and Education

DOI:
10.1080/1475939X.2016.1263805

Publication date:
2017

Citation for published version (APA):
Hall, G., & Ivaldi, A. (2017). A qualitative approach to understanding the role of lecture capture in student learning experiences. *Technology, Pedagogy and Education*, *26*(4), 383-394. https://doi.org/10.1080/1475939X.2016.1263805

A qualitative approach to understanding the role of lecture capture in student learning experiences

Gareth Hall[1] and Antonia Ivaldi

Department of Psychology, Aberystwyth University, Aberystwyth, Wales

[1] Corresponding Author. Email: gbh@aber.ac.uk

Abstract

Lectures continue to be the dominant form of university teaching, and lecture capture technologies are tentatively taken up to support this form of delivery, rather than being used as a viable alternative. Much of the previous research, however, has been self-reports or survey based, with far less attention given to qualitative explorations. This study aims to bridge this gap by using qualitative methods in order to examine students' experiences of lecture capture provisions within the context of their own learning by utilising 6 focus groups to generate data. Thematic analysis was used to understand group opinions and experiences of lecture capture within a university teaching. Two conceptual themes emerged: enhancing the learning environment and working and learning strategically. Results showed that lecture capture provisions could not be fully evaluated independent of current learning environments where they contribute to alleviating negative perceptions of lectures. In addition, the extent to which lecture capturing develops and enhances the learning experience is discussed. Recommendations for how learning and teaching committees can utilize lecture capturing are proposed.

Lecture capturing, Thematic analysis, Qualitative methods

Introduction

To facilitate widening participation in Higher Education and to meet the needs of so called 'Digital Native' learners (Prensky, 2001; Miliken & Barnes, 2002), institutions have reconsidered the nature and role of traditional learning environments. These considerations include integrating technology enhanced learning, such as lecture capturing provisions (Owston, Lupshenyuk, Wideman, 2011). Broadly, however, the integration of technology into learning and teaching practices has not been universally accepted by academics. Particularly in relation to lecture capturing, issues around attendance to lectures and redundant lecturers have been discussed in the literature and media (Charlton, 2006; Wolff, 2011). More recently, pre-recorded courses, such as Massive Open Online Courses, have generated further concern that education will become about entertainment, facilitate privatisation of Higher Education, while also lowering academic attainment in distance learners (Vernon, 2013). However, given the continued dominance of traditional didactic lectures is evident enough that learning technologies have not had the negative impact they were feared to have had; lectures are still the dominant delivery method of content and lecturers and students still attend.

A brief overview of lecture capturing

Lecture capturing has achieved notable attention in the literature on learning technologies, affectionately termed 'podogogy' by some scholars (Rosell-Aguilar, 2007, p. 487). The general consensus, however, is that the benefits of lecture capturing in Higher Education are ambiguous or minimal with some populations of students (e.g., international students; those with learning difficulties; lower performing students) benefiting more than others (Karnad, 2013; McGarr, 2009); lecture capture's role, therefore, is in a supportive capacity that provides added value to the student

experience. Some of the main arguments against using lecture capturing is its potential impact on attendance and attainment (Kanrad, 2014; McGarr, 2009; Owston et al., 2011; Von Konsky et al., 2009), and perhaps it is these issues that stifle its uptake and development.

Whilst literature on attendance has evidenced a decrease in student numbers when lecture capturing has been made available (e.g., Gosper, et al., 2008; Traphagan, Kuscera, & Kishi, 2010), this might be explained as a result of the discipline itself (Wang, Mattick, & Dunne, 2010), or that students considered to be academically mature in their attitudes have considered reasons for not attending (Holbrook & Dupont, 2009; Owston et al., 2011). However, other literature has demonstrated little influence on student attendance (e.g., Toppin, 2011; Walls et al., 2010). Medical students, for example, preferred live lectures over streamed and recorded lectures, and that the availability of streamed or recorded lectures did not affect their motivation to attend. Rather, the perceived opportunity to interact with a lecturer motivated students to attend whilst also having a more satisfying learning experience (Wang et al., 2010). However, studies relating to attendance need to be interpreted with caution as many provide self-reported attendance rather than actual observed attendance (see Bongey, Cizadlo, & Kalnbach, et al., 2006). Further still, those studies that reported observed attendance do not report that their courses were already poorly attended or provide pre intervention attendance data (see, for instance, Traphagan et al., 2010).

In terms of student attainment, the evidence is also ambiguous as comparing marks between previous cohorts is difficult given the fluctuation between student performance and changes in tutors and content, which can cause fluctuations in grades between those who had access to recorded lectures and those who did not (McGarr,

2009). In general, some literature has shown increased attainment when didactic lectures were substituted with lecture capturing while other studies have shown attainment is dependent upon complexity and comprehension of tasks (recorded lectures were less useful with complex information that required combining with other knowledge, Giannkos & Vlamos, 2012), student performance (e.g., those who were failing are more likely to improve; Traphagan, Kucksera, & Kishi, 2010), as well as amount of note-taking needed in class where being able to review lectures facilitated attainment for those who could not keep up with note taking (McKinney et al., 2009). This is also experienced by students whose first language is not English and so recorded lectures help overcome initial linguistic and/or learning difficulties (Leadbeater, Shuttleworth, Couperthwaite, & Nightingale, 2013). In contrast, however, other studies have not evidenced an increase in student attainment (Hove & Corcoron, 2008; von Konsky et al., 2009).

What is not as present in the literature is discussion about lecture capturing's benefits in terms of pastoral support to enhance attainment, student retention, and progression. In addition to overcoming linguistic diversity (Leadbeater et al., 2013) it is likely that pastoral support through recorded lectures can be extended to students who have long-term illness, other learning difficulties beyond dyslexic, are mature-students with family commitments. In this sense, lecture capturing could be a useful tool in helping make Higher Education more accessible to such students in manner that was originally intended.

In general, McGarr (2009) suggests that the impact of lecture capturing (and related technologies, such as podcasts) upon learning and traditional lecturing is related to how educators choose to use such provisions. As such, research in this area needs to

move beyond assessing its implementation during didactic lectures and impact on assessment and attainment and focus upon the benefits of using the technology intelligently, and in educating students in using these technologies in a manner that enhances their learning experiences.

Finally, despite several studies about lecture capturing having utilised qualitative methods and data (e.g., Gosper et al., 2010; Woo et al., 2008), they consist mainly of open-ended statements as part of a self-report survey. These studies only offer a narrow perspective of learners' subjective experiences with lecture capturing within the context of their overall education. Qualitative methods provide rich data in order to explore a particular experiential phenomenon (see further, Smith, 2008; Willig, 2008), which seek to develop, amplify, or refute the more dominant findings outlined in the quantitative research relative to survey designs and open-ended statements. While survey methods provide information about the extent of learning and teaching experiences of, and attitudes towards using lecture capturing, they do not help us to understand why there are differences in attitudes and perceptions. Given the call in studies (e.g., Kanrad, 2014; Taplin, Low, & Brown, 2011) for further 'in-depth' research about experiences with lecture capturing, many of the remaining ambiguities may be explained by the limitations of survey methods and their lack of scope in exploring these issues more deeply.

In summary, it appears that there is consensus about lecture capturing provision's ability to negatively influence lecture attendance, but most studies have shown this not to be supported. Similarly, the literature concerning its impact upon student attainment is perhaps less convincing, but learning is not impaired either. Although, far more rigorous experimental methods and long-term studies are required in

order to understand the impact of lecture capturing on student attendance, so too are detailed case studies about why students experience lecture capturing differently during their study habits.

Study justification

The research documents that lectures continue to be the dominant form of university teaching, and that technology enhanced learning tools – specifically lecture capture in this instance – are tentatively taken up to support learning. Further still, studies about lecture capturing have been based primarily on attendance and attainment using surveys, with far less attention given to qualitative methodologies; there is very little research that draws on students' experiences, expectations, and perceived value in interacting with lecture capturing provisions and why there are differences in student experiences.

This study, therefore, has several aims. Firstly, given the ubiquitous use of qualitative methods in other disciplines, namely those in the Social Sciences, it seems unusual to have a field of research that seeks to understand users' experiences that deviates from qualitative methods as a frequent and valid method of inquiry. To address a recognised distinct scarcity of qualitative research about student learning experiences with lecture capturing (c.f., Wang et al., 2010), we aim to develop the qualitative literature in this field in order to further our understanding of students' experiences of lecture capture provisions in ways that self-report measures and other quantitative designs have not been able to do. Secondly, by utilising qualitative methods, we aim to identify and explore the dominant themes and debates made relevant in students' talk

about the different ways of experiencing lecture capturing as part of their study habits and learning process.

Our core research aim, therefore, seeks to address the question how do students make sense of lecture capturing as a learning aide at university? To conduct our study we utilise the trend in Higher Education to introduce and standardise lecture capturing as a minimal expectation for learning experience (Owston et al., 2011), and we present data from one UK University that introduced lecture capturing into the lecture environment in 2013.

Method

Design

A qualitative design that utilised focus groups was employed. Focus groups were used in order to generate data via group interaction as Barbour and Kitzinger (1999) posit that focus groups are ideal for exploring people's experiences and opinions, and how they are responded to by others through conversation with the group.

Participants

In total 42 undergraduates (males; *N*= 23 and females; *N*= 19) who were studying at a British university in Wales took part and ranged in age from 19 – 26. Students came from eight different departments that were already piloting lecture capturing in their modules (Computer Science; Psychology; Art History; Sports Science; Criminology; Geography; European Languages; Accounting), with lecture enrolment ranging from 40 to 120 students. Participants had used lecture capturing provisions in varying amounts, ranging from five to ten unique views in one module.

Procedure

Six focus groups were held lasting between 60 and 90 minutes. In an attempt to reduce convergence in responses, participants in each focus group responded to themed "yes" and "no" or "agree" and "disagree" statements using Qwizdom voting system, such as "Did lecture capturing increase your understanding of topics covered in class?" Results of the responses were displayed on a computer monitor as percentages in a bar graphs. Participants were then asked to elaborate upon their answers together as part of a semi-structured interview that encouraged more detailed responses (e.g., why do you think recorded lectures influenced your understanding of topics covered in class?) of the focus group discussions. The study received ethical approval from the department's ethics committee and was conducted in accordance with the British Psychological Society's ethical code. All personal data were kept confidential and student responses fully anonymized.

Data Analysis

Recordings of the groups were transcribed verbatim and analysed using Braun & Clarke's (2006) six step procedure for conducting thematic analysis (Table 1). An important feature of thematic analysis in the selection process is establishing internal homogeneity – external heterogeneity. For example, extracts that fitted into multiple themes were collapsed into a higher order theme and a new candidate theme was generated. As the stages progressed, some extracts were removed as stronger extracts that demonstrated each theme were used as examples. This pattern was repeated until there was a consensus between the authors that there were distinct themes; two overarching conceptual themes were identified.

[Insert table 1 here]

Results and Discussion

In our data we identified two central themes that explored (1) how and why lecture capturing enhanced student learning experiences, and (2) how lecture capture enabled students to work and learn strategically.

Theme 1: Enhancing learning experiences

Across three sub-themes students showed: (a) how lecture capturing highlighted the cognitive demands of lectures, exaggerated lectures as a negative learning experience, and attenuated cognitive demands whilst also providing a safety net; (b) that despite the availability of lecture capturing, lectures were the preferred learning environment as a result of a perceived social and traditional learning benefits in attending lectures as part of a typical student experience; and (c) that lecture capture provided a means of support.

Increasing and assisting cognitive demands

Students showed consensus that lectures were cognitively demanding and that utilising recorded lectures highlighted factors that negatively influence their learning experiences. For example, students emphasised in particular that sources of frustration and anxiety during lectures were the speed of delivery by lecturer, which affected clarity of notes and in comprehending the content. Students, therefore, used recorded lectures to attenuate these scenarios, specifically to develop their notes:

> "…I got very frustrated whenever the lecturer went so fast that I couldn't get a quarter of the notes on the slide that I ought to have made (…) I sort

of put the pen down and gave up on those notes and thought ‘ok, I’ll get them off the video later’, which evolved into ‘I’m not going to bother taking any notes’ because I am having to focus a lot harder to keep up (…) I’m not really taking it all in”.

The lecture environment, we conclude, challenges students’ ability to listen and understand, but lecture capturing provided a source of control through facilitating post-lecture engagement to fill in missing, and make sense of, unclear notes, reducing academic related anxiety.

Our students also came to expect lecture capturing in all lectures, but some academic staff chose not to deploy it in team taught modules. As such, those students who experienced an inconsistent use in their modules further highlighted the positive value of having lecture capturing available, such as perceived attainment, but also dissatisfaction with a lecture when it was not available:

“I really dislike that it isn’t in every module I study and you really feel the difference [in terms of the pressure to keep up] of not having it in modules that don’t; the difference is really pronounced, so I’d say you need it in all modules for it to be a real success for students to do consistently well”.

Students also acknowledged their individual contribution in their learning during lectures. For example, students’ motivations and concentration fluctuated daily, and lectures times did not always fit well with their motivation to learn. Recorded lectures

facilitated students to review the lecture when they felt in a more positive and motivated state of mind.

> "Lots of times in lectures you don't feel like learning, you're not in the right mind, but when you're watching these [recorded lectures] back you're kind of willing to learn, that's the whole purpose of watching them back, so I definitely think you pick up more".

The social learning environment

Although students initially described a negative overview about lecture environments, students frequently contradicted their initial critical views about lectures. When asked what the added value in continuing to attend lectures was if recorded lectures were a positive source of attainment, students outlined two recurring reasons for attending lectures that emphasised a) lecture capturing not being a sufficient source for sole information, and b) it allowed the building of rapport with the lecturer. Although students differed in their opinion about the exact benefits of lectures, their responses typically recast lectures in a more positive light, while downplaying lecture capturing as a supportive tool. When prompted to develop their experiences of lectures as a positive learning experience, students tended to further devalue post-lecture learning via recorded lectures in favour of emphasising the social benefits in attending lectures. In emphasising the social benefits, students typically referenced lecturer-

student interaction as a positive benefit in their learning experiences, and was a main detraction from solely relying on lecture capturing.

> "it [pre-recorded lectures] takes away the whole idea of being at university doesn't it if you start having to get a computer to do your learning, so you're coming to a place, but you're not learning here really, you're learning on the Internet (…) you pay a lot of money to listen, and have someone point at a board and ask you questions, and that's the best way of doing it".

> "You get to know the lecturers in lectures, too (…) they can really make learning stuff interesting, and that (…) you can ask questions and stuff which you can't do with these [lecture recordings] (…) so it's good to have the lecturers there in the first place".

Although other reasons existed for attending, for example, receiving hand-outs, hearing content first-hand, and participating in entertaining lectures, there was little consensus between participants. Lecture capturing, then, was not an ideal substitution as it removed the social and additional advantages in attending lectures.

Providing pastoral support

Students also acknowledged lecture capturing's ability to support students in their learning where there extenuating circumstances or additional learning needs. The most recurring theme that demonstrated a perception of support through recorded lectures was regarding its pastoral benefits for international students and those on long-

term illness. Although students from the UK used recorded lectures to understand and learn technical jargon, most students in our data recognised the benefits of recorded lectures in developing international students' linguistic skills:

> "...if I'd just come to Britain it [lecture capturing] would be really useful to understand better, but now I don't really have any problems with understanding (...) thinking about other international students, I think that might be a really helpful way for them to listen to the lecture again, pause, check the word in the dictionary and listen to it again…".

Although the extract above emphasises international students, our students – to a lesser extent – identified those with dyslexia, in particular, as being able to benefit from lecture capturing availability. In addition, one mature student noted its benefits to them in facilitating flexible child-care, which was their reason for non-attendance. Students also identified that another core pastoral feature of lecture capture was during periods of genuine illness or when experiencing family problems where lecture capturing was a prominent feature in the way that they had caught up. Instead of using peers' notes and hand-outs to make sense of each topic, they could now listen to the whole lecture:

> "…quite comfortable [if I went off again ill for 3 to 4 weeks now], because even though you're ill, like say you've had 3 or 4 weeks off, and you come back without this [lecture capturing] you'd have to catch up on everyone else's notes, in like a 3 or 4 day period […] you can catch up on it [lecture

capturing] an hour after the lecture has been, so you can keep control of all your work load".

In summary, theme 1 evidenced students' perceptions of how lecture capture helped to enhance their learning and learning experience. Theme 2 explores this notion further, but in the context of using lecture capture strategically, as a way to manage workloads and learn more efficiently.

Theme 2: Working and learning strategically

In their talk students constructed themselves, and particularly others, as strategic users of lecture capture, to the extent that some held the belief that individuals could be advantaged by the technology more than others. Through four sub-themes, students showed that lecture capture: (a) helped students to prioritise their workloads; (b) enabled students to extend their learning; (c) was used to reconstruct learning spaces in environments where they felt more motivated and could learn more efficiently; and (d) gave students an unfair advantage to students who did not attend.

Prioritising workloads

Students provided a consensus that their decision to attend lectures was unrelated to lecture capturing being available. Rather, self-selected attendance was attributed to external events, such as part-time work, workload and deadlines whereby their attendance at lectures typically decreased. Lecture capturing, therefore, was utilised as part of their overall decision making strategy for how best to prioritise tasks,

rather than as the main reason for non-attendance. Lecturing capturing in these instances not only influenced how they caught up with the missed work, but was also seen as an enabler in facilitating continued study:

> "… with art there's a lot of coursework to be in for a deadline and obviously when it's things like painting it takes quite a long time to get it done, so I think if I had a deadline or something and then I was close to finishing it, but if I went to the lecture then I wouldn't be able to [finish the assignment]. I think I might be tempted to skip it if I knew it [lecture capturing] was going to be up later."

> "I know a lot of my course mates don't turn up to go to lectures whether they're being recorded or not, just because they have a busy time of assignments, so I think it [lecture capturing] would be useful and I think it would be used to say 'I can catch up on that later, so I won't go, I need to get this assignment done'."

Students experience conflict between attendance and coursework priorities, but recognise that attendance at lectures 'should' be an expectation of being a student. However, in these instances, the decision not to attend lectures was not indicative of poor motivation to do well or to learn, rather, they presented a strategic rationale for their decision making which meant they could focus on other competing course requirements.

Although it appears to be used ‘intelligently’ by our students in providing more control over their time management, lecture capturing may also be preventing students from developing their time management skills for use when they graduate; lecture capturing will not always be available to them. Furthermore, there were also instances where students chose not to attend regardless of lecture capturing being available:

> “The lectures I had missed (...) I probably still would have missed them anyway, it’s [lecture capturing] just affected how I’ve caught up. I would have felt slightly less bad if I’d known that they [lecture captures] were there.”

As educators we need to consider whether utilising lecture capturing is helping or preventing our students in learning life skills, but also whether removing access to recorded lectures for non-attending students should be used punitively to prevent them from benefitting from the technology.

Embellishing learning

Students elaborated upon how lecture capturing enhanced their learning experience beyond acting as a safety net for unclear notes. Students identified how lecture capturing further enhanced their learning experience through (a) developing their independent and post-lecture study, and (b) providing an opportunity to learn in more comfortable learning environments.

Although students reported using recorded lectures to maintain clearer notes, as discussed earlier, it was also important as a catalyst to engage with supplemental

reading. Increasing clarification in their notes, as well as contextualised content enhanced their self-efficacy in handling more advanced reading in journal articles, but also providing control over the material and their knowledge:

> "…sometimes the way you write your notes down, don't give you an idea of the actual context in which it was set, so if you listen to them the way they talk about the information, seems to make more sense (…) I read some of his [the lecturer] papers after, and I have done the lecture capture; reading it [the journal article] made it so much easier …".

The other main use in facilitating supplemental reading showed how recorded lectures can provide a simple memory refresh during revision periods. These students who had unsuccessfully attempted to consolidate the supplemental reading and material simply reviewed the lectures during revision periods to aide recall in order to return to the reading.

> "…when you go back to revise [from recorded lectures] then it's good to have a starting point (…) because if you can't remember what's happened in a lecture and you jump straight into a book, sometimes it goes straight off your head".

Here, lecture capturing was seen as a stepping stone and motivating factor in post-lecture study, rather than a replacement for further reading. It appears to provide

students with the perception that they are learning more efficiently, but also providing confidence in the initial stages of revision in particular.

Reconstructing learning spaces

Students also emphasised the role of 'learning on the go', that is, how lecture capture facilitated mobile learning such as revising in an environment of their choosing that was perceived to be effective, but also one where they were motivated to learn. As described earlier, some students found concentrating to be difficult during lectures, but the ability to download and reconstruct space for learning provided students with a sense of being productive:

> "...it's [lecture capturing] not a resource you have to use, the fact that someone's even watching it [anywhere] is a success, it's showing that they obviously want to listen to it. They've gone out of their way to download it, so I think you're not going to sit down and watch it somewhere you don't think you're going to get much out of it. I have a 9 hour train journey home so I can sit down and go through lectures I want to catch up on or want to do a piece of coursework".

Other students had described using coffee shops, making audio podcasts with the download, listening to them at the gym, or watching them with their parents. As such, we concluded that despite conflicting with their earlier views about lectures being a contested learning space, students wanted to learn in environments that were more comfortable for them. These are environments that might not normally be considered

good learning environments by academics, particularly as some of these environments are full of distractions, but they do seem to be as passively social in nature as lecture theatres i.e. limited interaction with those around you. In this sub-theme lecture capture appears to be promoting post-lecture studying, but that the evidence suggests that it is not independent of preferred learning spaces.

Resenting non-attending students

Although the students in this study indicated that they used lecture capturing strategically, and facilitated non-attendance at specific times in the year, they also developed resentment towards regular non-attending peers. There was consensus in a sense of injustice with non-attending peers achieving similar grades to more 'strategic' students as a result of having lecture capturing available:

> "I find it more the fact that I'm putting in the time to go to lectures and actually getting up at 9am to go and they're not and they're still going to be getting the same degree, maybe, out of it. Kind of a little bit annoying but then I wouldn't want to take away the opportunity of it."

> "I find it [lecture capturing] helps me a lot, but then at the same time I'm thinking, those people are making a big advantage out of it, even bigger than I have."

In the extracts above, we see resentment towards non-attending peers, but also the assumption that these same students are accessing recorded lectures. Students

questioned the efficacy in attending lectures on their attainment if their peers were achieving the same outcomes. Despite this, however, resentment was reconstructed into acceptance. Specifically, students saw their peers as autonomous individuals responsible for their learning, and that lecture capturing could facilitate their learning choices and habits as it did for them when choosing to prioritise coursework:

> "As long as they understand the material and they do the exams or whatever I don't think it makes a difference [if they attend]. As long as they're up to standard with everyone else it doesn't matter how they learnt it really".

> "When it comes down to it, it's their education so it's what they want out of it and if they want to give the least amount that they can do their studies. I don't think that hindering [through penalising attending students by removing lecture capturing] other people that want to get the best out for their degree should stand in the way"

In summary, theme 2 explored students' strategic use of lecture capture in a way that enabled them to take control of their learning. The advantages to this, however, were viewed favourably as well as unfavourably when the technology could be seen to be to be manipulated to the benefit others, resulting in some students feeling that their own performance and effort was undermined.

General discussion

A key outcome to emerge from our data was how students contextualised lecture capturing as a learning event that contrasted with lectures as the primary learning event. On the one hand, lecture capturing was an independent learning experience, but on the other, it could not be understood independently of the lecture learning environment. In general, participant responses from all groups about lecture capturing were positive in terms of a learning enhancement tool. Specifically, lecture capturing provided an opportunity to control their learning experiences, habits (e.g., time management), and learning environment leading, therefore, to a perceived enriched learning experience. These benefits were exaggerated in their talk when contrasted with didactic lecture environments where they felt they had less control over their learning experiences. However, they recognised lecture capturing should not be the sole source of learning, although recognised it could be (e.g., for those who were ill, or strategically decide to not attend), as well as acknowledging that lectures provided the best learning experience primarily as a result of the perceived social benefits.

In relation to lecture capturing, our data has contributed to the literature in several ways. First, our data corroborate quantitative data that has shown students engage with lecture capturing to attenuate cognitive demands in lectures and improve attainment, and that it clarifies complex information and unclear notes (Bongey et al., 2006; McKinney et al., 2009). Additionally, however, this study also develops the existing literature by providing evidence that suggests that having well developed notes facilitated more contextualised and potentially productive supplementary reading. Consequently, we believe lecture capture motivated and structured post-lecture study, despite focussing around note-taking in the first instance. In general, post-lecture engagement has broadly been found to have a more significant impact upon attainment

than attendance to lectures (Stinebrickner & Stinebrickner, 2004; 2008). Second, we develop the literature by providing evidence that, during the formal periods of learning, students felt that they were learning more effectively when their mind-set was more positive towards learning content; this was due to being able to transform when and where they learned and took notes with lecture capturing. These included unconventional learning environments when they felt more positive about learning material.

Third, our data corroborates the literature (e.g., Leadbeater, Shuttleworth, Couperthwaite, & Nightingale's, 2013) in terms of lecture capture's benefits in providing pastoral support to specific student populations (e.g., international students, those with dyslexia) by being able to review lectures and develop vocabulary and note-taking skills. Lecture capture facilitated retention of students with long-term illness, specifically, lecture capturing in this instance made an important contribution in how students – who might have otherwise unnecessarily dropped out – actually caught up with the course content. However, this further emphasises the ability of lecture capturing to act as a main learning source rather than enhance lecture attendance and the ability to obtain a degree through recorded lectures.

Fourth, our data show that lecture capturing did not influence our students' decisions to attend lectures, corroborating some of the literature about lecture capturing and its impact upon attendance (e.g., Toppin, 2011; Wall et al., 2010; Wang et al., 2010). Rather, our data developed the literature by showing that external factors influenced decisions to attend lectures. We conducted a brief literature review related to external factors influencing lecture attendance and found several studies that support this assertion. Briefly, Hitchens & Lister (2009) showed that reduced attendance to lectures

was influenced by poor timetabling practices, while Massingham & Herrington (2006) showed that the alignment of lectures with assessments influenced attendance. Moreover, Newman-Ford, Fitzgibbon, Lloyd and Thomas (2008) showed that part-time work, being a mature student with children, and workload periods influenced attendance. Subsequently, we learn that students use lecture capturing more strategically than has been reported in the literature to facilitate work load and time management.

Fifth, our data documents that students, like academics, are concerned about non-attending students learning solely through recorded lectures. These 'strategic' students showed resentment to frequent non-attendees who were perceived as being given an unfair opportunity to do as well in their degree. Of course, this could happen anyway, but what our students were highlighting was that they believed it is possible to obtain a degree by relying solely on lecture capturing, contradicting their earlier beliefs about the impact of attending lectures on attainment. However, it was recognised that non-attending students were equally as strategic and autonomous for their learning. Lecture capturing, therefore was one tool that facilitated strategic learning decisions as it had done with students who decided to not attend during busy periods.

Sixth, despite the strategic decisions in attendance our data develops the literature regarding the value of lecture attendance within the context of lecture capturing availability. As reported by Wang et al., (2010) students perceived attendance to lectures as a source of satisfaction; students preferred attending lecture environments for a variety of social reasons, but also that attendance was an expectation of their role as a student, as well as gaining perceived value for tuition fees. Data suggest that lecturing capturing potentially detracts from the student experience, in general, if lectures were to replace didactic lectures. Our students still preferred lectures as the

main source of information and that recorded lectures were not the most effective method of learning. Finally, our data suggest that the satisfaction in attending lectures is in constant conflict with the frustration and anxiety experienced during the actual learning experience in lectures.

Conclusion

Overall, the benefits of lecture capturing are primarily to attenuate challenging aspects of lecture environments, and provide more flexible learning opportunities post-lecture that include note-taking and the ability to catch up after missing lectures. In doing so, students perceived to be learning more effectively and in a manner where they felt more attentive and experienced a more positive learning environment. Consequently, students' motivation to attend may still be questioned in future, but their motivation to learn is less questionable. Lecture capturing, while perhaps not directly enhancing their attainment, is supporting students in experiencing a more gratifying learning experience that they perceive to be beneficial to their learning.

In utilising qualitative methods our study has corroborated, amplified, and developed the literature about lecture capturing and its impact in Higher Education. In doing so, we have presented richer data than generally survey methods can produce on their own. Specifically, we have learnt that that there are contested accounts over the advantages and disadvantages of lecture capturing availability, but at the same time have learnt more about students' studying practices and experiences with lecture capturing in several ways. Practically, Universities might be able to use this knowledge to facilitate retention particularly at vulnerable periods, such as the transitional period from college to university, for example. This might become a larger issue as widening

participation schemes attract broader demographic populations to University who may require further pastoral support. Ultimately, however, the needs of the students and the staff should be considered equally and simultaneously in order to experience the full benefit of this technology.

Acknowledgments

The authors wish to acknowledge the contribution of Aberystwyth University in awarding the Learning and Teaching Enhancement Fund to the authors to conduct the study.

References

Barbour, R.S., & Kitzinger, J. (Eds.). (1999). *Developing focus group research*. London: Sage.

Bongey, S., Cizadlo, G., & Kalnbach, L. (2006). Explorations in course-casting: Podcasts in higher education. *Campus-Wide Information Systems, 23*(5), 350-367.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3,* 77–102.

Charlton, B.G. (2006). Lectures are such an effective teaching method because they exploit evolved human psychology to improve learning. *Medical Hypotheses (editorial) 67,* 1261–1265.

Giannakos, M. N., & Vlamos, P. (2012). Using webcasts in education: Evaluation of its effectiveness. *British Journal of Educational Technology, 44,* 432–441. doi: 10.1111/j.1467-8535.2012.01309.x

Gosper, M., Green, D., M., McNeill, M., Phillips, R., Preston, G., & Woo, K. (2008). The impact of web-based lecture technologies on current and future practices in learning and teaching. New South Wales, Australia: Australian Learning and Teaching Council. Retrieved from www.mq.edu.au/ltc/altc/wblt/research/report.html

Gosper, M., McNeill, M., Phillips, R., Preston, G., Woo, K., & Green, D. (2010). Web-based lecture technologies and learning and teaching: a study of change in four Australian universities. *Research in Learning Technology, 18*(3), 251-263. doi: 10.1080/09687769.2010.529111

Hitchens, M., & Lister, R. (2009). A focus group study of student attitudes to lectures. In M. Hamilton & T Clear (Eds.). *Proc. Eleventh Australasian Computing Education Conference (ACE 2009),* Wellington, New Zealand. CRPIT, 95. ACS. 93-100.

Holbrook, J., & Dupont, C. (2009). Profcasts and class attendance – Does year in program matter? *Bioscience Education, 13*, 1-4. doi: 10.3108/beej.13.c2

Hove, M., & Corcoran, K. (2008). If you post it, will they come? Lecture availability in introductory psychology. *Teaching of Psychology, 35*(2), 91-95.

Karnad, A. (2013). Student Use of Recorded Lectures: A Report reviewing recent research into the use of lecture capture technology in Higher Education, and its impact on teaching methods and attendance. London School of Economics and Political Science, London. Retrieved from http://eprints.lse.ac.uk/50929/1/Karnad_Student_use_recorded_2013_author.pdf

Leadbeater, W., Shutterworth,T., Couperthwaite, J., & Nightingale, K. (2013) Evaluating the use and impact of lecture recording in undergraduates: Evidence

for distinct approaches by different groups of students. *Computers Education, 61*, 185–192.

Massingham, P. and Herrington, T., (2006). Does attendance matter? An examination of student attitudes, participation, performance and attendance. *Journal of University Teaching & Learning Practice, 3*(2), 80-103. Retrieved from http://ro.uow.edu.au/jutlp/vol3/iss2/3

McGarr, O. (2009). A review of podcasting in higher education: Its influence on the traditional lecture. *Australasian Journal of Educational Technology, 25*(3), 309-321. Retrieved from http://www.ascilite.org.au/ajet/ajet25/mcgarr.html.

McKinney, D., Dyck, J.L., & Luber, E.S. (2009). iTunes University and the classroom: Can podcasts replace professors? *Computers & Education, 52*, 617-623.

Milliken, J., & Barnes, L. P. (2002). Teaching and technology in higher education: Student perceptions and personal reflections. *Computers & Education, 39* (3), 223–235. doi: http://dx.doi.org/10.1016/S0360-1315(02)00042-8.

Newman-Ford, L., Fitzgibbon, K., Lloyd, S., & Thomas, S. (2008): A large-scale investigation into the relationship between attendance and attainment: a study using an innovative, electronic attendance monitoring system. *Studies in Higher Education, 33* (6), 699-717. Retrieved from http://dx.doi.org/10.1080/03075070802457066

Owston, R., Lupshenyuk, D. & Wideman, H. (2011). Lecture capture in large undergraduate classes: Student perceptions and academic performance. *The Internet and Higher Education, 14* (4), 262–268.

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon, 9* (5), 1-6.

Rosell-Aguilar, F. (2007). Top of the pods – In search of a podcasting "pedagogy" for language learning. *Computer Assisted Language Learning, 20* (5), 471-492.

Smith, J.A. (Ed.). (2008). *Qualitative psychology - a practical guide to research methods* (2nd ed.). London: Sage.

Stinebrickner, R., & Stinebrickner, T.R. (2004). Time-use and college outcomes. *Journal of Econometrics, 121* (1-2), 243-269.

Stinebrickner, R., & Stinebrickner, T.R. (2008). The causal effect of studying on academic performance. *The B.E. Journal of Economic Analysis & Policy, 8* (1). (Frontiers). doi: 10.2202/1935-1682.1868. Retrieved http://www.bepress.com/bejeap /vol8/iss1/art14 .

Taplin, R., Low, L.H., & Brown, A.M., (2011). Students' satisfaction and valuation of web-based lecture recording technologies. *Australian Journal of Educational Technology, 27* (2), 175-191.

Toppin, I. N. (2011). Video lecture capture (VLC) system: A comparison of student versus faculty perceptions. *Education and Information Technologies, 16*(4), 384-395.

Traphagan, T., Kusera, J. V., & Kishi, K. (2010). Impact of class lecture webcasting on attendance and learning. *Educational Technology Research and Development, 58*(1), 19–37. doi:10.1007/s11423-009-9128-7.

Vernon, J. (2013). Open online courses: An avalanche that might just get stopped. *The Guardian*. http://www.theguardian.com/education/2013/apr/29/massive-open-online-courses (accessed June 28th, 2013).

von Konsky, B. R., Ivins, J., & Gribble, S. J. (2009). Lecture attendance and web based lecture technologies: A comparison of student perceptions and usage patterns. *Australasian Journal of Educational Technology, 25*(4), 581-595. [Online] Available at http://www.ascilite. org.au/ajet/ajet25/vonkonsky.html

Walls, S. M., Kucsera, J. V., Walker, J. D., Acee, T. W., McVaugh, N. K., & Robinson, D. H. (2010). Podcasting in education: Are students as ready and eager as we think they are? *Computers & Education, 54*, 371-378.

Wang, R.L., Mattick, K., & Dunne, E. (2010). Medical students' perceptions of video-linked lectures and video-streaming. *Research in Learning Technology, 18* (1), 19-27.

Willig, C. (2008). *Introducing qualitative research*. (2nd ed.). Maidenhead: McGraw Hill/Open University.

Wolff, J. (2011). Will video kill the lecturing star? *The Guardian*. http://www.guardian.co.uk /education/2011/jan/18/lectures-higher-education-jonathan-wolff (accessed on February 13th, 2012).

Woo, K., Gosper, M., McNeill, M., Preston, G., Green, D., Phillips, R. (2008) Web-based Lecture Technologies: Blurring the boundaries between face-to-face and distance learning. *Research in Learning Technology, 16*(2), 81-93.